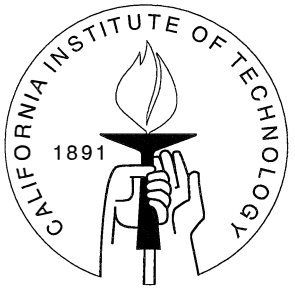
DIVISION OF THE HUMANITIES AND SOCIAL SCIENCES
CALIFORNIA INSTITUTE OF TECHNOLOGY
PASADENA, CALIFORNIA 91125

FEDERALISM AND CENTRAL BANK AUTONOMY: THE POLITICS OF GERMAN MONETARY POLICY, 1957–1992

Susanne Lohmann



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Abstract

Two channels of political control allow elected politicians to influence monetary policy. First, central bankers may accommodate political pressures to ward off political threats to the status, the structure, or the very existence of the central bank. Second, politicians may use their powers of appointment to ensure that central bank appointees share their electoral and party-political goals. This paper derives the monetary policy outcomes obtained as a function of the degree of central bank independence (zero, partial, or full) and of central bankers' types (partisans or technocrats).

Based on a case study of the 1957 and 1992 institutional changes to the German central banking system and a regression analysis covering the 1960-1989 period, I argue that the formal autonomy of the system is protected by its embeddedness in the institutions of German federalism and by the federalist components of its decentralized organizational structure. I conclude that the behavioral autonomy of the German central bank fluctuates over time with the party control of federalist veto points. The evidence is consistent with the hypothesis that the Bundesbank is staffed with non-partisan technocrats who are partially insulated from political pressures.

Federalism and Central Bank Autonomy: The Politics of German Monetary Policy, 1957-1992

Susanne Lohmann*

1 Institutions of German Federalism and Central Banking

The Deutsche Bundesbank is celebrated as one of the most independent central banks in the world (Cukierman 1992). The Bundesbank Law of 1957 stipulates that the Bank is independent from instructions of the federal government. At first blush, it is surprising that German politicians, who devised this law, would deliberately abdicate power to a central banking institution. After all, monetary policy has huge allocative and distributional effects on the wealth and well-being of political constituencies.

One motivation for central bank independence is that an independent central bank is less likely to respond to counterproductive political pressures. According to the electoral politics hypothesis, incumbent policymakers have incentives to expand the money supply prior to elections to stimulate employment and output and thereby increase their chances of re-election (Nordhaus 1975; Rogoff and Sibert 1988). The party politics hypothesis proposes that one political party caters to a constituency with preferences for low inflation, while its competitor represents a constituency that is better off with a high rate of inflation. As a result, monetary growth, inflation, employment, and output vary over time as a function of the party in power (Hibbs 1977; Alesina 1987; Chappell and Keech 1986). In each case, the political

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incentives to use monetary instruments for electoral or party-political gain lead to monetary variability that could be reduced or even eliminated if central bankers were insulated from political pressures.

The independent status of the Bundesbank can be thought of as an institutional solution to the distortions created by the political vulnerability of monetary policy. It is widely thought that the formal autonomy of the German central banking system is protected by the German people's aversion to inflation, fed by their historical experience with hyperinflation. German political culture--specifically the widespread distrust of politicians and political parties--is also invoked to explain why changes to the Bundesbank's independent status are taboo in German political discourse (Caesar 1981).

If the formal autonomy of the Bundesbank has meaningful implications for its behavioral independence, political influences on monetary policy should be less pronounced or even non-existent in Germany. Empirical studies of German monetary policy come to mixed conclusions. Some scholars provide evidence that German monetary policy is subject to electoral or party-political influences, while others reject one or the other hypothesis (e.g., Frey and Schneider 1981; Alesina and Roubini 1992; Lang and Welzel 1992; Loynd and Alvarez 1992; Eschweiler and Bordo 1994; Johnson and Siklos 1994).

I argue that empirical studies of political influences on German monetary policy yield inconclusive results for two reasons. First, they lack sufficient appreciation of important institutional features of the German central banking system and second, they fail to control for political factors that affect the degree of (behavioral) central bank independence over time.

By and large, scholars of German monetary policy base their empirical work on the assumption that the federal government controls the money supply. In other words, the government is assumed to have not only the incentives but also the ability to manipulate monetary instruments in pursuit of electoral or party-political goals. There are, however, good reasons why it is inappropriate to model the government and the Deutsche Bundesbank as a unitary actor.

The Bundesbank is granted some degree of formal independence, as noted above. Clearly, the degree of central bank autonomy would be irrelevant for the conduct of monetary policy if the Bundesbank were populated with perfect agents of the federal government who share the electoral or party-political goals of their political principal. Central bank

independence matters only if the monetary policy preferences of the Bundesbank differ from those of the government.

In fact, the federal government only appoints a minority of the members of the Bundesbank Council, which makes monetary policy decisions by simple majority rule. The organizational structure of the Bundesbank is partially decentralized, consisting of a central headquarters and a system of Land Central Banks (regional central banks). The presidents of the Land Central Banks are chosen by the Land (regional state) governments and form a majority of the central bank council; the members of the Directorate are selected by the federal government and form a minority.[1]

Federal and Land elections are staggered so that the electoral incentives of federal and Land appointees do not necessarily coincide. Moreover, one empirical regularity in German elections is that the major opposition party at the federal level regularly gains votes in Land elections. As a consequence, the federal government often faces an opposition in the Länder, and the timing and outcomes of federal elections do not correlate well with changes in the party control of the Bundesbank Council (see Figure 1). In this setting, the appointment powers of the federal government are insufficient to guarantee its control of the money supply. If central bank appointees share the electoral or party-political goals of their respective political principals, then monetary policy outcomes will arguably depend on the majority control of the central bank council rather than the party control of the federal government.

[FIGURE 1 ABOUT HERE]

Indeed, the relationship between the federal government and the Bundesbank is often tension-filled--especially when the latter is controlled by the party that forms the opposition at the federal level. When a government coalition of Christian Union Parties (CDU/CSU) and the Free Democrats formed in 1982, former Social-Democratic Chancellor Helmut Schmidt blamed the fall of his Social-Liberal coalition government on the excessively restrictive monetary policy of the early eighties (Kennedy 1991, ch. 3). His accusations were echoed in a radio commentary:

[1] Formally, the President of the Republic appoints all members of the Bundesbank Council. The Land Central Bank presidents are de jure nominated by the Bundesrat but de facto selected by their respective Land governments; the members of the Directorate are nominated by the federal government.

> In the last years of his chancellorship, Schmidt must have experienced the policy of scarce and expensive money as an interest rate bondage . . . . For several years, Schmidt had suspected the strongly federalist central bank council of following a policy of fighting inflation because a majority of Land Central Bank presidents represented CDU/CSU-governed Länder. (Balkhausen 1992, 139-140)

Over a decade later, history reversed itself. For a number of years, the Bundesbank had followed an extremely restrictive monetary policy to cope with the inflationary pressures created by German unification. When Schmidt's successor, Christian-Democratic (CDU) Chancellor Helmut Kohl, was up for re-election in the fall of 1994, the money supply expanded dramatically in the four pre-election quarters. The German news magazine Der Spiegel (1994, 105) commented suspiciously:

> In fact, the CDU-dominated central bank council appears to have lost control of the money supply at a time that is strategically most advantageous for re-election purposes.

So far my discussion has been based on the assumption that elected politicians control the central bank via their powers of appointment: central bankers are partisans who share the electoral or party-political goals of their political principals. A plausible alternative hypothesis holds that the Bundesbank is an excellent example of Schumpeter's (1942, 293) "well-trained bureaucracy of good standing and tradition, endowed with a strong sense of duty and a no less strong esprit de corps." According to this view, the Bundesbank is staffed with non-partisan technocrats who are guided by the Bundesbank's proud ethos of refusing to compromise in matters of inflation (Kennedy 1991, 8). Unsurprisingly, this is also the self-image of Bundesbank representatives.

Elected politicians may deliberately choose to appoint non-partisan types if they are ex ante better off insulating monetary policy from party-political pressures. Or they may make partisan appointments only to see their appointees submit to the Bundesbank's stifling institutional culture. The transformatory power of Bundesbank-internal peer group pressures has become widely known as the "Thomas Becket effect" (Marsh 1992, 33).

If central bankers are non-partisan technocrats, then elected politicians can influence monetary policy by threatening the status, the structure, or the existence of the central bank. The degree of central bank independence--or, equivalently, the degree to which the Bundesbank is impervious to political threats--then determines the extent to which central bankers are forced to accommodate electoral or party-political pressures.

Cross-national studies of central banking in industrialized countries typically focus on formal rather than behavioral independence (see Cukierman 1992 and references therein). By and large these studies assume implicitly that the degree of agency discretion enjoyed by a central bank is invariant over time if the formal status of the central bank does not change. While the Bundesbank is certainly granted some degree of political independence, the comparison with other central banks tends to obscure the fact that the German central bank is not perfectly insulated from the pressures of German politics. Moreover, while the legal status of the Bundesbank remained unchanged from 1957 to 1992, informal evidence suggests that the behavioral independence of the Bundesbank has fluctuated considerably during this time period (Caesar 1981; Goodman 1992; Lohmann 1994a). It is clearly of interest to identify the political factors that might explain such variation over time.

One factor determining the scope of the Bundesbank's discretionary powers is given by the popularity of the chancellor and his economic policies. If the federal government pressures the Bundesbank to accommodate its electoral or party-political demands, the Bundesbank can threaten to go public. A public dramatization of the conflict creates political costs--but the popularity of the federal government determines whether these costs are primarily borne by the government or by the Bundesbank. If popular support for the government and its economic policies is already weak, then public resistance on the part of the Bundesbank will further undermine the government's position. On the other hand, the Bundesbank endangers the legitimacy of its independent status if it publicly quarrels with popular elected officials. Thus, the government's political capacity to influence monetary policy increases with its popularity.

A second factor determining the degree of central bank independence can be identified with reference to the institutions of German federalism and central banking. The Bundesbank is more likely to accommodate political pressures if its independent status would otherwise be undermined. The Bundesbank Law is a simple federal law, and the government can threaten to change the Law with the goal of eliminating the formal independence of the Bundesbank, centralizing the Bank's organizational structure, or dissolving the Bundesbank institution

altogether. Since Germany is a parliamentary democracy, legislation proposed by the federal government is typically supported by a majority in the Bundestag, the first house of parliament.

However, the credibility of a legislative threat is limited by the institutions of German federalism. Changes to the Bundesbank Law can be vetoed by the Bundesrat, the second house of parliament. The members of the Bundesrat are delegates of the Land governments, who have a stake in the Bundesbank institution and thus may resist institutional changes--especially changes in the direction of more centralization. The threat of a Bundesrat veto may force the federal government to expend political capital and modify its legislative proposals to ensure their passage through the Bundesrat. Ultimately the veto powers of the Bundesrat may be too weak to prevent central bank legislation from being passed, but they can effectively create legislative transaction costs and hurdles, thereby delaying legislation for many months or even years. At the very least, the Bundesrat veto has the potential to prevent the passage of legislation driven by very short-run political interests.

Given the prominent role of party discipline in German politics, such legislative obstruction is less likely under unified party control of the Bundestag and the Bundesrat. This situation arises when the parties that form the federal government also control a large number of Land governments. The federal government can then threaten to undermine the Bundesbank's independent status with some degree of credibility. On the other hand, a government that faces a partisan opposition in the Länder and in the Bundesrat is in a weak position to force the Bundesbank to do its bidding. The Bank thus enjoys a greater amount of agency discretion under divided party control, while it is forced to accommodate political pressures to a greater extent under unified party control. It follows that the impact of political pressures on monetary policy will depend on the party control of the federal and Land governments, as well as the two houses of parliament.

Moreover, I conceive of central bank independence as a continuous variable rather than a dichotomous one: the weaker the partisan support for the federal government in the Bundesrat, the more time, effort, and political capital must be spent by the federal government to ensure the passage of its legislative proposals through the Bundesrat, and the more the government must compromise and modify its proposals.

Building on a case study of institutional change that demonstrates the impact of the Bundesrat veto point and its partisan control, the regression analysis conducted in this article

will take into account a variety of political factors that shape German monetary policy. Thus, my empirical analysis has the potential to provide more conclusive evidence for (or against) the notion that German monetary policy is influenced by electoral and party-political considerations.

The analysis also sheds light on the optimal design of central banking institutions. Even if the members of the central bank council are political appointees who share the electoral and party-political goals of their political principals, political pressures may be muted if the central banking institution is appropriately designed and deeply embedded in the institutions of federalism. With its emphasis on institutional design rather than formal independence, the analysis complements preference-based theories of central banking that prescribe the delegation of monetary policy authority to an independent central bank staffed with conservative types, captured by inflation-averse private banking interests, or dominated by a technocratic corporate culture (Rogoff 1985; Lohmann 1992, 1994a; Posen 1993; Maxfield 1994a).

Countering the "institutions don't matter" view articulated by Posen (1993), I argue that monetary institutions have an independent policy impact and are not simply epiphenomenal to the underlying political interests. The institutional membrane that maps monetary policy preferences into outcomes is, of course, at some point in time the object of political choice. In this sense, monetary institutions are shaped by the policy preferences of the relevant political actors at the "institutional design stage" (Lohmann 1992). Once a central banking institution is set up, however, any changes to the institution are difficult or costly due to the presence of "political veto players" (Tsebelis 1995). Indeed, a central point of my analysis is that elected politicians deliberately set up veto points in order to insulate monetary policy from counterproductive political pressures. The "stickiness" of institutional arrangements implies that the relevant political actors, their preferences, or other factors determining their relative power may change while the institution remains constant. In the case under consideration, the federal components of the Bundesbank institution are designed to give the Länder a stake in the institution, thereby turning the Bundesrat into an important veto player; however, the impact of this veto point varies over time as a function of divided versus unified party control of the federal and regional state governments.

My analysis is related to the New Institutionalism developed by McCubbins, Noll, and Weingast (1987). According to this approach, elected politicians may delegate power to political agencies, but they impose procedural and institutional constraints to ensure the

political control of the bureaucracy. In the United States, such delegation regimes may be shaped by divided versus unified party control of the presidency and Congress. My article analyzes the political control of a specific agency (the central bank) in a parliamentary system characterized by strong party discipline and separation of powers between federal and regional state governments.

There is an important distinction between the logic underlying the political control of the bureaucracy in general and of central banks in particular. The New Institutionalism asserts that political principals have ex ante incentives to structure the environment of political agencies with the objective of preventing the bureaucracy from developing discretionary powers, thereby ensuring its ex post political responsiveness. In contrast, elected politicians have ex ante incentives to depoliticize monetary policy decisions by (at least partially) insulating central bankers from ex post political pressures. One reason is that rational inflation expectations undermine the potential of monetary policy to produce systematic real effects on the economy that might further the electoral fortunes of incumbent politicians. Another reason is that politicians anticipate that they might be in the opposition in the future. As a result, they may be better off ex ante ensuring that monetary policy is not vulnerable to political pressures of any kind.

Finally, my analysis builds on the scholarly analysis of the Federal Reserve System (e.g., Beck 1982; Woolley 1984; Grier 1991; Chappell, Havrilesky, and MacGregor 1993; Havrilesky 1995). In the United States, monetary policy decisions are made by the Federal Open Market Committee (FOMC). Its voting membership consists of seven governors and five (of twelve) regional district bank presidents. The governors are political appointees: they are chosen by the president subject to Senate confirmation. The appointment of bank presidents, each of whom is nominated by his or her district bank board of directors, is subject to private sector--and, in particular, financial sector--influences. Thus, a majority of the committee is "controlled" by the federal government, a minority by regional interests; "political appointees" form a majority on the FOMC, "banker appointees" a minority. The district bank presidents tend to prefer more restrictive monetary policies than do the governors. Presidential and Congressional powers of appointment and influence appear to create a bias toward expansionary monetary policies, which is muted by private sector influences on regional district bank appointments. The inflationary or deflationary contribution of central government versus regional district appointments, on the one hand, and political versus private sector appointments, on the other, is easily confounded.

In comparison, the Bundesbank Council consists only of political appointees, and regional state representatives can outvote federal government appointees. The analysis of the German case has the potential to disentangle the role played by partially decentralized appointment powers relative to other political factors.

The political systems of the United States and Germany differ in another important respect, which makes intellectual arbitrage difficult. The U.S. system is relatively more transparent. As a consequence, scholars can use publicly available data to measure the monetary policy preferences of central bank appointees and the severity of government-central bank conflict. Examples of such data are dissenting votes cast in FOMC meetings or the number of newspaper articles in which elected politicians and government officials complain about the direction of monetary policy.

In comparison, data about voting behavior on the Bundesbank Council is not publicly available. As a result, the link between political appointment powers and central bank accommodation can only be tested indirectly. Moreover, the government rarely pressures the Bundesbank in a publicly visible way, and only the most serious conflicts between the federal government and the central bank are carried out in public. To the extent that political pressures and government-central bank conflict are invisible to the scholar's eye, hypotheses about political influences on German monetary policy must rely on indirect measures. The use of indirect, and possible very crude, measures has the potential to weaken the positive and normative conclusions drawn from the empirical analysis. For this reason, it is all the more important to provide a careful motivation for the measures used. This is the purpose of the case study, which supplements the regression analysis. Before I turn to the empirical evidence, however, I present the theory that is to be tested.

2 A Theory of Delegation and Accommodation

The electoral and party political theories developed by Nordhaus, Hibbs, and other scholars are modified in two ways to allow for their application to the institutions of German central banking and federalism: I examine the role of central bank independence and of partially decentralized appointment powers. My analysis thus allows for two channels by

which elected politicians can influence monetary policy: political pressure and the power of appointment.

The degree of central bank independence may vary continuously between zero and full independence. Furthermore, political appointees may be partisans or technocrats. In accordance with the two theories developed by Nordhaus and Hibbs, political appointees may be partisan in two ways: they may have a stake in the re-election chances of the federal government; or they may follow an expansionary or restrictive monetary policy depending on the inflation preferences of their party's constituency.

My theory is "general" in the sense that it encompasses the hypotheses proposed by Nordhaus, Hibbs, and other scholars as special cases that are obtained for some combination of assumptions about the degree of central bank independence (zero, full, or partial) and central bankers' types (partisans or technocrats). These two factors define the relationship between monetary growth and the timing of federal elections, as well as monetary growth and the partisan control of the federal government or the central bank council (see Table 1 and Figures 2 and 3).

[TABLE 1 AND FIGURES 2 AND 3 ABOUT HERE]

Zero Independence and Partisans or Technocrats (H_1). Nordhaus' electoral politics hypothesis assumes that the government controls the money supply; the same holds for Hibbs' party politics hypothesis.[2] In other words, their hypotheses obtain if the degree of central bank independence is zero, in which case central bankers' types--partisans or technocrats--are irrelevant:

H_1 (Zero Independence and Partisans or Technocrats)

- Monetary growth rates are higher prior to federal elections.
- Monetary growth rates are lower (higher) if the federal government is controlled by a right-of-center (left-of-center) party.

[2] Rogoff and Sibert (1988) formulate the Nordhaus hypothesis in a rational inflation expectations framework; Alesina (1987) and Chappell and Keech (1986) do the same for the Hibbs hypothesis. The implications for monetary growth rates are robust.

Full Independence and Partisans (H_2). Next, I consider the case in which monetary policy is set by simple majority rule in a central bank council composed of a minority of federal government appointees and a majority of regional state appointees, all of whom share the electoral or party-political goals of their respective political principals.

Nordhaus' electoral politics hypothesis is replaced by Vaubel's (1993) obstructionist hypothesis.[3] Suppose that both federal and regional policymakers prefer to have their party control the federal government. Then their central bank appointees manipulate the money supply prior to federal elections. However, the sign of the pre-election monetary stimulus depends on whether the party that is incumbent at the federal level controls the central bank council. If so, then monetary growth will be higher in pre-election periods--as before. On the other hand, if the federal government faces a partisan opposition on the council, then monetary growth will be *lower* in pre-election periods: the opposition-controlled central bank will attempt to thwart the re-election chances of the incumbent party by following a restrictive monetary policy prior to the election.

Hibbs' party politics hypothesis is replaced by a median voter hypothesis: whether monetary growth is expansionary or restrictive is determined by the party affiliation of the median voter on the central bank council.[4]

The obstructionist and median voter hypotheses hold if the central bank is controlled by fully independent partisans:

H_2 (Full Independence and Partisans)

- Monetary growth rates are higher (lower) prior to federal elections if the federal government is supported (opposed) by a partisan majority on the central bank council.
- Monetary growth rates are lower (higher) if the median voter on the central bank council was appointed by a right-of-center (left-of-center) party.

[3] Lohmann (1994b) formalizes the obstructionist hypothesis in a rational expectations framework.
[4] Lohmann (1994c) formalizes the median voter hypothesis in a rational expectations framework.

Full Independence and Technocrats (H_0). Maintaining the assumption that the central bank is fully independent, I now consider the possibility that central bankers are technocrats. If so, monetary growth is not subject to electoral or party-political influences. For obvious reasons, this special case of my model--the central bank as benevolent dictator--serves as the null hypothesis:

H_0 (Full Independence and Technocrats)

Monetary growth rates are free of electoral or party-political effects.

Partial Independence and Partisans (H_3). If central bankers are partially independent partisans, then the sign and size of the pre-election monetary stimulus depend on the party control of the federal government and of the Bundesbank, as well as the degree of central bank independence; the same factors determine the degree to which monetary growth is expansionary or restrictive for party-political reasons:

H_3 (Partial Independence and Partisans)

- Monetary growth rates are set as a linear combination of the partisan monetary growth rates desired by the federal government and by the median voter on the central bank council, where the relative weight on the monetary growth rate preferred by the federal government decreases with the degree of central bank independence.

Partial Independence and Technocrats (H_4). If, instead, central bankers are partially independent technocrats, then electoral and party-political effects are increasingly muted as the degree of central bank independence rises:

H_4 (Partial Independence and Technocrats)

- Monetary growth rates are set as a linear combination of the partisan monetary growth rate desired by the federal government and the non-partisan monetary growth rate desired by central bank technocrats, where the relative

weight on the monetary growth rate preferred by the federal government decreases with the degree of central bank independence.

3 A Case Study of Institutional Change

The political impact of the Bundesrat veto point and of its partisan control are now illustrated with a case study of the 1957 replacement of the Bank deutscher Länder by the Deutsche Bundesbank and the 1992 modification of the Bundesbank institution necessitated by German unification. [Lohmann (1994a) provides further details and documentation.] The case study serves two purposes. First, it motivates four measures of central bank independence that are utilized in the regression analysis. Second, it provides qualitative evidence complementing the quantitative results of the regression analysis.

After the Second World War, the military occupation forces in West Germany set up a decentralized system of Land Central Banks coordinated by their joint subsidiary, the Bank deuscher Länder in Frankfurt. The decision-making body of the system was composed of the presidents of the Land Central Banks and two further members of their choice, the president of the central bank council and the president of the Directorate. The Bank deutscher Länder was formally independent of the federal government.

The 1949 Constitution provided a mandate to replace military law with German law and establish a central bank. The political debate about the institutional design of the central banking system began soon thereafter and continued through two legislative periods:

> no one directly called the independence of the future central bank into question . . . . At issue, instead, was the degree of centralization in the new banking system . . . . the vehemence of the debate throughout West German political and social life indicated that significant interests were . . . at stake. (Goodman 1991, 337)

The federal government initially favored a decentralized central banking system in which a majority of the members of the central bank council would be selected by the Land governments. However, when the Bank deutscher Länder followed a very restrictive

monetary policy in 1955 and 1956, Chancellor Konrad Adenauer became unhappy with its perceived failure to support economic reconstruction. Questioning the legitimacy of the Bank's independence, the federal government subsequently developed legislation to implement a more centralized central banking system, in which the federal government would gain majority control of the central bank council via its appointment powers. The government's legislative proposal was supported by a majority in the Bundestag, but the Bundesrat expressed a preference for a decentralized system consistent with the "one Land, one Land Central Bank" principle.

Numerous proposals and counterproposals ended with a compromise. The Bundesbank Law was passed by both houses of parliament in July 1957. The Bundestag vote was unanimous. In the Bundesrat, only two Länder voted against the Law, and there is no obvious partisan pattern in the vote. Up to the end, there was considerable disagreement regarding the question whether the Law was zustimmungspflichtig (required the approval of the Bundesrat). This issue remained unresolved when the compromise bill was passed by a two-thirds majority of the Bundesrat.

The highly decentralized and independent Bank deutscher Länder was thus replaced by a partially decentralized and partially independent central banking institution. Until the Law was modified in 1992, the council consisted of de jure up to ten and de facto between six and nine federal government appointees (the members of the Directorate) and eleven regional state appointees (the Land Central Bank presidents). Moreover, the formal autonomy of the Bundesbank is limited. The Law stipulates that the Bank is independent of instructions from the federal government in following its mandated goal of safeguarding the currency, but the Bundesbank is also required to support the general economic policy of the federal government. The Law is ambiguous; the formulators of the Bundesbank Law deliberately chose not to specify how a potential conflict between the goal of safeguarding the currency and competing policy objectives of the government should be resolved. In their view, the public dramatization of conflicts between the government and the central bank was desirable, with the public (represented by political parties and the media) serving as an umpire. The outcome of such a conflict would then depend on the relative trust placed by the public in its elected representatives and in the appointed defenders of the currency.

In the following decades, in fact, both the federal government and the Bundesbank would enter into a public conflict only when the stakes were high, given the considerable political costs associated with such a conflict. The government is aware that a public conflict

can threaten its stability--especially if the popularity of the chancellor and his economic policies is ailing; in three cases, the Bundesbank is said to have directly or indirectly contributed to the resignation of a chancellor or to the collapse of a coalition government (Marsh 1992, 225). On the other hand, the Bundesbank knows that it can endanger the legitimacy of its independent status if it publicly quarrels with popular elected officials; in one case its resistance to the popular policies of a chancellor ended with the resignation of the Bundesbank president (Marsh 1992, Ch. VIII). Even if a conflict is not actually fought out in public, the political costs incurred in the event of a public confrontation have an impact on monetary policy: they determine the degree to which the Bundesbank must accommodate political pressures in order to avoid a public debate.

The above discussion suggests that the formal autonomy of the Bundesbank can be classified as partial only. Moreover, the Bundesbank's legal independence is complemented by the federalist components of its organizational structure. In the debate leading up to the passage of the Bundesbank Law, described in Deutsche Bundesbank (1988), the decentralized structure of the central bank was celebrated as an institutional guarantee of its independence. Similarly, the pluralism of the appointing bodies and the participation of the Länder in the appointment process was thought to contribute to the Bank's autonomy. Central bankers who are not subject to a unified political will were said to be more independent.

The principle of central bank independence vis-à-vis the federal government was deemed crucial for the safeguarding of the currency: this principle would be institutionally guaranteed by the federalist components of the central bank's internal organizational structure, which create legislative hurdles making future amendments to the Bundesbank Law difficult and time-consuming. Indeed, the Law of 1957 was said to be characterized by the "stamp of compromise" due to the "retarding influence of the Länder" (Könneker 1957, 796). In the course of the debate, the value of the "one Land, one Land Central Bank" principle became apparent. A strong link between the federal structure of the Länder and the structure of the Bundesbank was associated with a high likelihood that the Länder would resist any attempts of the federal government to change the Bundesbank Law or force the Bundesbank to do its bidding.

Several decades later, another political debate on the design of the German central banking system occurred after German unification was completed on October 3, 1990. The unification treaty of August 1990 required the Bundesbank Law to be modified within one year of unification, by October 3, 1991, with the objective of integrating the new East German

Länder into the Bundesbank system. However, due to the fierce dispute between the federal and Land governments about the organizational form of the new central banking system, the deadline was not met: it took two years to modify the Bundesbank Law. As before, the central issue was the degree of centralization of the central banking system:

> German political elites, particularly in the ruling Christian Democrat-Free Democrat coalition and members of the Bundesbank Directorate . . . used the events of German unification and the discussions over European monetary integration as strategic rationalizations to hone the Bundesbank into a more centralized and less federal structure, a structure which will be . . . less dominated by [the presidents of the Land Central Banks]. (Kaltenthaler 1993, 2-3)

The federal government sought to increase the relative number of federal appointees on the Bundesbank Council by consolidating the Land Central Bank system. The government's bill was rejected by a two-thirds majority of the Bundesrat that instead supported a proposal embodying the "one Land, one Land Central Bank" principle while maintaining the maximum size of the Directorate prescribed in the Bundesbank Law of 1957. Since the number of Länder had increased after German unification, this proposal amounted to a strengthening of the Land component on the central bank council.

The Bundestag passed the legislative proposal of the federal government by simple majority, largely along party lines with some abstentions. An overwhelming majority of the Bundesrat subsequently rejected that proposal and initiated the formal conciliation procedure. This majority contained the oppositional Social Democrats, who controlled a simple majority of the Bundesrat, as well as some Christian-Democratic Land governments. The latter were torn between representing the interests of their Länder, on the one hand, and supporting the proposal of the federal government, on the other.

The compromise proposal of the conciliation committee was subsequently rejected by a simple majority of the Bundesrat, which also declared the Bundesbank Law to be zustimmungspflichtig. The vote followed party lines, with the Social Democrats voting against the federal government's proposal. The initially close-to-united front of Länder had broken up: some Land representatives in the Bundesrat who had initially voted in favor of the Bundesrat's decentralized proposal had switched their support to the federal government's bill. To

undermine the opposition and convince wavering Christian Democrats in the Bundesrat, the federal government had modified its proposal. Indeed, it was not a coincidence that three states governed by the Social Democrats and only one Christian-Democratic state were forced to give up their Land Central Banks. The federal government only had to modify marginally its proposal to convince Christian Democrats to support its bill, whereas it would have been more expensive to pay off Social Democrats to vote against their party line. Overall, the consolidation and specific location of the Land Central Banks were clearly determined by political and not technocratic considerations.

If a two-thirds majority of the Bundesrat had voted against the proposal of the conciliation committee, or if changes to the Bundesbank Law had been classified consensually as zustimmungspflichtig, then the Bundestag would have had to counter the Bundesrat veto with a two-thirds majority, and the federal government did not have such a majority in the Bundestag. Based on the presumption that the bill did not require the approval of the Bundesrat, a simple majority of the Bundestag proceeded to pass the changes to the Law. Thus, partisan majorities in the two houses of parliament disagreed about the legal status of the Bundesbank Law. The government of the Rheinland-Palatinate, controlled by the oppositional Social Democrats, initially threatened to petition the Supreme Court for a finding that the law was zustimmungspflichtig, but it backed off when its Land Central Bank gained responsibility for the Saarland. (In 1961, the Court had declared changes to the Bundesbank Law not to be zustimmungspflichtig, but the change under consideration was a minor one. There was some residual uncertainty about how the Court would decide if approached in 1992.)

The Fourth Law Modifying the Bundesbank Law thus passed in June 1992. The Law allows for nine Land Central Banks and up to eight members of the Directorate. Some Länder are represented by their own Land Central Bank, while others share a Land Central Bank. The Bundesrat veto point thus ensured that Land appointees continue to form a majority on the council; but it failed to prevent a further dilution of the federalist components of the German central banking system. First, the number of Land Central Bank presidents has declined absolutely, and the ratio of regional state and federal government appointees has decreased from an average of 11/8 in the 1957-1992 period to an average of 9/8 in the 1993-1995 period. Second, the "one Land, one Land Central Bank" principle has been given up. The Land governments that share a Land Central Bank must now agree on a compromise candidate for the presidency of their Land Central Bank. One consequence of such a consolidated Land Central Bank system was illustrated subsequently when the position of Land Central Bank

president for the Länder Schleswig-Holstein, Hamburg, and Mecklenburg-West Pomerania remained unfilled for a year because the Land governments--two of them controlled by the Social Democrats, the other one dominated by the Christian Democrats--could not agree on a candidate.

4 Regression Analysis

The formal status of the Bundesbank remained constant between 1957 and 1992, and yet my empirical analysis employs quarterly data covering only the time period 1960-1989. The data set begins with the year 1960 for two reasons. First, the Saarland and West Berlin are only included in national income statistics as of 1960. Second, a fair test of theories assigning an important role to political parties can be conducted only for a reasonably stable party system. In the 1950s, the West German party system was still very much in flux. By the early sixties, almost all special interest and regional parties had merged with other parties or dropped out of federal and regional state parliaments. The data set ends in 1989 to avoid confounding the monumental political changes associated with German unification in 1990 with other factors driving the Bundesbank's political responsiveness.

The time period 1960-1989 has the potential to allow for a powerful test of divided government effects. It is characterized by several switches in power at the federal level. From 1960 to 1966, the right-of-center Christian Union Parties (CDU/CSU) formed a government coalition with the centrist Free Democrats (FDP); a grand coalition of CDU/CSU and the left-of-center Social Democrats (SPD) governed from 1966 to 1969; the SPD held power together with the FDP from 1969 to 1982, followed by a coalition of CDU/CSU and FDP. Both single-party and coalition governments occurred at the Land level. While a handful of Länder have been dominated by one party, no party has had a lock on a majority of the Land governments during this time period, and the partisan majorities in the Bundesrat have changed several times.

There is one potential drawback to testing the party politics hypothesis on data of this time period. A number of factors unrelated to German politics are associated with the world-wide inflation of the 1970's and disinflation of the 1980's, and these factors cannot be fully disentangled from the effects of left- and right-of-center party control of the German government in the seventies and eighties, respectively.

One such factor is given by shifts in the academic (near-)consensus among economists regarding the efficacy of Keynesian stabilization policies. The once-dominant doctrine of an inflation-unemployment tradeoff has been replaced by the wide-spread view that it is inappropriate to use monetary policy instruments to fight unemployment or raise output, as well as a new recognition of the importance of price stability for aggregate welfare. The current doctrine provides the Bundesbank with an intellectual rationale to fend off political pressures for inflation as counterproductive and irresponsible.

Another factor is given by increasing international interdependencies and--of particular importance for monetary policy--financial integration. Maxfield (1994a) argues that the competition between countries for scarce capital intensifies with financial integration. To attract or reassure global investors and creditors, countries cede authority to central banks or reinforce existing authority, with disinflationary consequences. It is worthwhile noting, however, that Germany has long been internationally very competitive with regard to the independence of its central bank.

The regression variables are defined in Table 2. The descriptive statistics of the data are documented in Table 3. The substantive significance of my empirical inquiry is supported by some intriguing patterns that appear in the descriptive statistics of German monetary growth. On average, the money supply expanded at a rate of 7.8% over the time period 1960-1989. The average for the four quarters preceding each federal election is 8.2%. Monetary growth averages 7.8% under the Grand Coalition; 8.1% in periods of Social-Liberal rule; and 7.6% in periods of Christian-Liberal government (see Table 4). Thus, electoral and party-political influences appear to be present in the raw data. I now conduct an Ordinary Least Squares (OLS) regression analysis to test the monetary policy implications of my theory.

[TABLES 2, 3, AND 4 ABOUT HERE]

Full Independence and Technocrats (H_0). I first develop and test a base economic model that also serves as the null ("benevolent dictator") hypothesis H_0 according to which German monetary policy is free of electoral and party-political influences.

The dependent variable is the growth rate of the seasonally adjusted central bank money stock. (All growth rates are calculated as fourth-quarter-to-fourth-quarter percentage growth rates.) The choice of monetary variable is guided by the fact that the Bundesbank

targeted the central bank money stock from 1975 to 1987--from 1988 onwards, it targeted the monetary aggregate M3. As explained further below, I control for changes in the Bundesbank's reaction function across two regimes, the 1960-1974 period when the Bundesbank did not publicly commit itself to a monetary target and the 1975-1989 monetary targeting regime. The Bundesbank missed its targets seven out of fifteen times in the 1975-1989 period, suggesting that the monetary policy constraints implied by the targets were weak at best. For this reason, I do not control for the size of the targets.

Since the German economy is highly integrated into the world economy, the Bundesbank is concerned not only about output growth and inflation, but also about external balance. I thus include the following independent variables in my regression equation: the one-quarter lagged growth rate of gross national product (GNP); the one-quarter lagged inflation rate of the consumer price index; and the one-quarter lagged U.S. Dollar-Deutschmark exchange rate.[5]

To capture the constraints on monetary policy implied by Germany's participation in the Bretton Woods fixed exchange rate system, I include a Bretton Woods dummy variable that takes on the value one in the time period 1960/1-1973/1 and the value zero otherwise. I allow for the possibility that the Bretton Woods regime constrains the Bundesbank's response to real and nominal variables by including as independent variables the product of the Bretton Woods dummy variable, on the one hand, and each of the economic controls (rates of GNP growth, inflation, and exchange rate depreciation) on the other. All of the Bretton Woods variables serve another function, namely to control (approximately) for the possibility of a change in the monetary policy reaction function when the Bundesbank switched to a monetary targeting regime in December 1974.

Germany's subsequent membership in another fixed exchange rate system, the European Monetary System (EMS), is reflected in a second dummy variable that takes on the value one in the time period 1979/2-1989/4 and the value zero otherwise. I allow for the possibility that the EMS constrains the Bundesbank's response to real and nominal variables by including as independent variables the product of the EMS dummy variable, on the one hand, and each of the economic controls (rates of GNP growth, inflation, and exchange rate devaluation) on the other.

[5] GNP is the standard measure of "output" in German national income statistics; many other countries (including the United States) use gross domestic product instead. The Dollar-Deutschmark exchange rate is chosen because a significant amount of world trade is invoiced in Dollars, and because the Dollar and the

The period not covered by the Bretton Woods and EMS dummy variables, 1973/2-1979/1, corresponds (approximately) to the period in which some member states of the European Community fixed exchange rate parities within pre-specified margins of fluctuation. Thus, the Bretton Woods and EMS dummy variables, both in their simple and multiplicative form, indirectly control for the monetary policy effects of this exchange rate regime, the "Snake (in the Tunnel)." The exchange rate regime dummy variables also serve as indirect controls for the potentially inflationary effects of the oil price shocks that impinged on the German economy in the mid-1970's.

Preliminary regression results indicate persistence in the monetary growth rate over time. Following Lang and Welzel (1992), I add the one-period lagged monetary growth rate as a dependent variable. The presence of a lagged dependent variable implies that one of the assumptions underlying standard OLS regression analysis is violated, namely that the right-hand-side variables are independent of the disturbance term. As a consequence, the OLS estimators are biased. While the lagged dependent variable is correlated with past disturbances, it is contemporaneously independent of the disturbance term so that the OLS estimators are consistent. In a panel or cross-sectional study characterized by a low number of observations per unit of analysis, the bias may be unacceptably large. However, my time-series analysis is based on 115 observations.[6] The bias is consequently very small and does not affect the qualitative results of the analysis.[7]

Another problem associated with the presence of a lagged endogeneous variable is that the Durbin-Watson statistic may be biased. I deal with this problem by reporting the Durbin *h* statistic.

[TABLE 5 ABOUT HERE]

Deutschmark are close substitutes in their role as international reserve currencies.

[6] I use 115 and not 120 observations, as might be expected for quarterly data covering the time period 1960-1989. This is due to the loss of the first five observations that arises when lagged fourth-quarter-to-fourth-quarter growth rates are formed.

[7] See Kennedy (1985, 122). Consider the model $y_t = \alpha + \beta y_{t-1} + \varepsilon_t$, where y is the dependent variable, β is the coefficient on the lagged dependent variable, and ε is a spherical disturbance. The bias of the OLS estimator of β, β^{OLS}, is given by $-(1+3\beta)/T$, where T is the number of observations. Note that the bias becomes small as T becomes large. (Moreover, the presence of additional regressors in the model *decreases* the bias.) One possible correction for the bias is to use the estimator $(T\beta^{OLS}+1)/(T-3)$. An inspection of the regression results summarized in Tables 5 and 6 shows that my qualitative conclusions are unaffected by the bias, given that T equals 115 in my analysis.

The regression results for the base economic model are reported in Table 5. The constant and lagged monetary growth have significant explanatory power at the 1% level. The coefficients on the Bretton Woods and EMS dummy variables are negative in sign and are significant at the 1% and 5% levels, respectively. This result is consistent with our prior knowledge about the inflationary accommodation of the oil price shocks in the mid-1970's (the period not covered by the Bretton Woods and EMS dummy variables).

The coefficients on other economic controls--the rates of GNP growth, inflation, and exchange rate depreciation, both in their simple and multiplicative form--exhibit a more complex pattern of signs and levels of significance. The Bundesbank is primarily responsive to inflation. This result is consistent with the widespread view that the Bank pursues its price stabilization goal in a single-minded way. Under the Bretton Woods regime, the coefficient on the inflation rate is positive and significant at the 1% level. In the post Bretton Woods period, inflationary pressures are met with a contraction in monetary growth; this effect is also significant at the 1% level. The EMS does not have an independent effect on inflation. These results are consistent with the conventional wisdom that the Bretton Woods regime significantly compromised the Bundesbank's pursuit of its price stabilization goal. The European Snake is thought to have imposed little if any constraint on the conduct of Germany monetary policy. The insignificant impact of the EMS is consistent with the commonly held view that the Deutschmark is (de facto, if not de jure) the anchor currency of the system.

Turning to the analysis of the political hypotheses, I find high levels of multicollinearity (and unsurprisingly so: see Figures 2 and 3). For this reason, I run a sequence of non-nested regressions, each of which tests one hypothesis about the degree of central bank independence and central bankers' types against the null. The regression results are summarized in Table 5. Each political variable is defined so that the predicted sign on its coefficient is positive.

Zero Independence and Partisans or Technocrats (H_1). To test the Nordhaus hypothesis, I form a pre-election dummy variable that takes on the value one for four quarters prior to each federal election and the value zero otherwise. The coefficient on this variable, "Pre-Election Period," has the right sign and is significant at the 5% level. The size of the coefficient reflects the substantive importance of electoral influences on Germany monetary policy. On average, monetary growth increases by .566% in the four quarters preceding federal elections.

As a robustness check, I form an alternative pre-election variable, taking into account that two federal elections were called early because the incumbent federal government had lost its majority in the Bundestag. To the extent that the early elections came as a surprise to the government and the Bundesbank (admittedly a questionable assumption), it is appropriate to set the pre-election dummy variable equal to one only for those quarters of the pre-election periods of the surprise elections that are part of the pre-election periods of the originally scheduled federal elections. The regression results for this variable are similar but weaker: its coefficient has the right sign but is marginally insignificant at conventional levels (1% and 5%).

To test the Hibbs hypothesis, I form a party code for the federal government (see Table 2 for details). The coefficient on this variable, "Party Control of Federal Government," has the right sign but is insignificant at conventional levels. This result appears to suggest that the one-half percentage point difference in monetary growth rates across Christian-Liberal and Social-Liberal governments observed in the raw data does not reflect party-specific monetary policy preferences, but other economic or political factors. However, the insignificant impact of party-political factors may be an artifact of effective controls for economic factors. In particular, the exchange rate regime dummy variables, both in their simple and multiplicative form, distinguish three periods of moderate, high, and low inflation that might otherwise be attributed to the party control of the federal government. It exceeds the scope of this paper to enquire into the possibility that exchange rate regimes are chosen endogeneously, depending on the party in power.

Full Independence and Partisans (H_2). To test Vaubel's obstructionist hypothesis, I create a dummy variable that takes on the value one if the median voter on the central bank council supports the federal government and the value minus one otherwise (see Table 2 for details). This variable is then multiplied with the pre-election dummy variable. The coefficient on the resulting multiplicative variable, "Pre-Election Period*Supportive Bundesbank Majority," has the right sign but is insignificant at conventional levels.

Vaubel claims that his obstructionist hypothesis is consistent with the post-war data for a significantly large number of pre-election periods, but he does not test his hypothesis in a regression analysis. I attempt to replicate Vaubel's result in a regression analysis that controls for a variety of economic variables. Since my partisan codes differ from Vaubel's, a failure to replicate his results could be due to coding differences. My partisan codes rely on publicly

available information about the party composition of federal and Land governments who appointed the members of the Bundesbank Council. This coding procedure has the advantage of transparency and replicability. Vaubel, on the other hand, relies on the assessment of five anonymous "Bundesbank watchers" (three academics and two bankers) to code the party affiliation of the members of the Directorate. Since the partisan sympathies of individual members of the Directorate do not always reflect the party composition of the federal government that originally appointed them, Vaubel's coding procedure has the potential to provide a more accurate picture of the party control of the Bundesbank Council. To ensure a fair test of the Vaubel hypothesis, I thus form an obstructionist dummy variable reflecting Vaubel's codes. The resulting variable does indeed perform better than the variable that is based on my coding procedure (as measured by *t* statistics), but it is also insignificant at conventional levels.

To test the median voter hypothesis, I assign to each member of the Bundesbank Council the party code of the federal or Land government that originally appointed him or her (see Table 2 for details). For each period, I then calculate the median value of the party codes of the members of the council. The coefficient for this variable, "Median Voter on Bundesbank Council," has the right sign but is insignificant at conventional levels.

The median voter model is based on the assumption that the monetary growth preferences of Bundesbank appointees reflect the preferences of the principals who originally appointed them. A plausible alternative assumption is that the members of the central bank council vote the preferences of their current political principals. The latter assumption is appropriate if central bank appointees are concerned about reappointment. To investigate this alternative hypothesis, I form an alternative median voter variable based on the following coding procedure: for each quarter, the members of the council are coded according to the party affiliations of their current political principals in that quarter. It turns out that in the 1960-1989 period the party control of the Bundesbank (as measured by this alternative median voter variable) coincides with the party control of the federal government. This result is not too surprising: between 1960 and 1989, the council was composed of eleven Land Central Bank presidents and between six and nine members of the Directorate. In order to win majority control of the central bank (as measured by the alternative median voter variable), the opposition party would have had to gain power in at least nine or ten (of eleven) Länder--which never occurred.

According to the alternative median voter variable, the federal government was always supported by a partisan majority on the Bundesbank Council. Using this result, the regression results for the Nordhaus and Hibbs hypotheses (H_1) can be reinterpreted. The hypothesis that the degree of central bank independence is zero so that monetary growth rates are determined by the party control of the federal government is observationally equivalent to the hypothesis that monetary growth rates are set by the median voter on the Bundesbank Council, if the monetary policy preferences of central bank appointees are determined by their current political principals.

This result also sheds some light on the original median voter model, according to which central bankers' partisan sympathies are determined by the political principals who originally appointed them. The implications of the original median voter model, on the one hand, and those of the standard electoral and party politics models, on the other, differ primarily because of the eight-year terms of appointment enjoyed by Bundesbank appointees, which are routinely renewed and are staggered relative to the electoral terms of their political principals. The party control of the Bundesbank (as measured by the original median voter variable) does not generally coincide with the party control of the federal government due to the lags implied by the length and staggeredness of Bundesbank terms of appointment.

So far I have assumed that the decision-making process within the central bank council is adequately described by a median voter model. Given the importance of consensus in the rhetoric of central bankers, a plausible alternative hypothesis is given by a bargaining model according to which the monetary growth rate set by the central bank is an (equi-)weighted average of the monetary growth rates preferred by each member of the Bundesbank Council. As a robustness check, I replace the original median voter variable with the average party code across Bundesbank appointees. The results for the median and average voter variables are very similar: the coefficient on the average voter variable has the right sign but is also insignificant at conventional levels.

Partial Independence and Partisans (H_3). To test whether the degree of central bank independence affects partisan monetary growth rates, I assume that the degree of independence decreases with the number of Bundesrat members who support the federal government. I utilize the Bundesrat measure of central bank independence because it is best motivated by the institutional analysis; the empirical performance of other measures will be discussed further below.

I form a linear combination of the pre-election dummy variable, on the one hand, and the product of the pre-election dummy variable and the dummy variable reflecting central bank support for the federal government, on the other. The relative weight on the first variable, w, is given by the proportion of Bundesrat members who support the federal government. The coefficient on the linear combination, "*w**Pre-Election Period+*(1-w)**Pre-Election Period*Supportive Bundesbank Majority," has the right sign and is significant at the 5% level.

Similarly, I form a linear combination of the party codes for the federal government and the median voter on the central bank council, where the relative weight on the former is given by the proportion of Bundesrat members who support the federal government, as before. The coefficient on the linear combination, "*w**Party Control of Federal Government+*(1-w)**Median Voter on Central Bank Council," has the right sign but is insignificant at conventional levels.

Partial Independence and Technocrats (H_4). To test whether the Bundesbank is controlled by partially independent technocrats, I multiply the pre-election dummy variable by the Bundesrat measure of central bank independence. The coefficient on this multiplicative variable, "Pre-Election Period*Size of Bundesrat Support," has the right sign and is significant at the 5% level. The size of the coefficient reflects the substantive significance of this hypothesis: if the party coalition controlling the federal government holds (say) thirty-seven seats in the Bundesrat, monetary growth rates will be .484% [=(37-15)x.022%] higher on average than if the government enjoyed the support of only fifteen Bundesrat delegates.

The party code for the federal government is also multiplied by the Bundesrat measure of central bank independence. The coefficient on this multiplicative variable, "Party Control of Federal Government*Size of Bundesrat Support," has the right sign but is insignificant at conventional levels.

Based on the *F* statistics reported in Table 5, I reject the null ("benevolent dictator") hypothesis H_0 in favor of hypothesis H_4, whose marginal explanatory power is significant at the 5% level. (None of the other political hypotheses outperforms the null at conventional levels of significance.) I conclude that the Bundesbank is staffed with non-partisan technocrats who are partially insulated from political pressures. Implicitly underlying this result is the auxiliary hypothesis that the Bundesbank's independence decreases with partisan support for the federal government in the Bundesrat.

Maintaining the hypothesis that German monetary policy is set by partially independent technocrats, I now compare the empirical performance of the Bundesrat measure and other measures of central bank independence.

The Bundesrat measure "Size of Bundesrat Support" implicitly attaches a greater weight to large Länder than to their smaller counterparts and zero weight to the city state of West Berlin (see Table 2 for details). In practice, the political leaders of small Länder can be very influential in forming the opinions of their parties. For example, Willy Brandt and Helmut Schmidt were mayors of the city states of West Berlin and Hamburg, respectively, before they succeeded to the chancellorship; the leader of the small Saarland, Oscar Lafontaine, was the Social-Democratic candidate for the chancellorship in the 1990 federal election. Thus, a second measure, "Size of Länder Support," is specified as the number of Land governments that support the federal government, thereby assigning equal weights to the Länder. A third measure, "Supportive Bundesrat Majority," is binary, taking on the value one under unified party control of the Bundestag and the Bundesrat and the value zero under divided party control.

A fourth measure, "Popularity," captures the notion that the degree of central bank independence decreases with the popularity of the federal goverment and its economic policies. It is equal to the percentage of public opinion poll respondents who express agreement with the economic policies of the chancellor.

These four measures are highly correlated, and unsurprisingly so: if the federal government is unpopular, the parties forming the government coalition tend to lose votes in Land elections and consequently tend to lose control of Land governments and of Bundesrat seats. For this reason, the second, third, and fourth measures of central bank independence serve as a robustness check for the Bundesrat measure (though the empirical performance of the popularity measure is of independent interest).

[TABLE 6 ABOUT HERE]

To deal with the multi-collinearity problem, I again employ a non-nested approach. The regression results are reported in Table 6. The coefficients on all political variables have the right sign. Consistent with my earlier results, the variables representing the electoral politics hypothesis are significant at the 5% levels, while the party-political variables are

insignificant at conventional levels. The *F* statistics reported in Table 6 indicate that "Size of Bundesrat Support" performs best, followed by "Size of Länder Support," "Popularity," and "Supportive Bundesrat Majority." The hypotheses employing the first two measures outperform the null hypothesis at a 5% level of significance; the hypotheses utilizing the last two measures are marginally insignificant at conventional levels. These results suggest that the measures are robust. It is not too surprising that the Bundesrat and Länder measures do better than does the binary measure of unified versus divided government; the former measures are better motivated by the institutional analysis and use the variability of the data to a greater extent.

My hypothesis that popular governments have more influence over monetary policy than do unpopular governments is virtually the opposite of a proposition put forth by Frey and Schneider (1981). The Frey and Schneider model implies that unpopular governments have incentives to manipulate monetary policy instruments to increase their chances of re-election, while popular governments do not. Frey and Schneider thus focus on government popularity as a factor influencing the government's desire to manipulate the economy for electoral gain, while I emphasize the government's ability to do so.

In an attempt to replicate Frey and Schneider's empirical results, I modify the pre-election dummy variable employed earlier, setting this variable equal to one in pre-election periods only if the popularity of the chancellor's economic policies is below average, and zero otherwise. The coefficient on this variable has the right sign but is insignificant at conventional levels. In contrast, my regression results support my proposition about the negative implications of government popularity for central bank independence. However, I cannot exclude the possibility that the relatively weak empirical performance of my popularity measure is affected by the offsetting effects of government popularity identified by Frey and Schneider and myself.

Based on my regression results, I draw the following conclusions:

- The Bundesbank is not fully independent.
- German monetary policy is subject to electoral pressures. There is no evidence that partisan preferences are influential via the power of appointment.
- The Bundesbank Council is staffed with partially independent technocrats whose independence decreases with the partisan support for the federal government in the Bundesrat.

These results are qualified as follows: first, the insignificant impact of party-political effects may be due to the fact that they are easily confounded with a variety of economic factors driving German monetary growth, for which the regression analysis provides effective controls. Second, because of the high degree of correlation between the institutional and popularity measures of central bank independence, it is reasonable to keep an open mind about the possibility that the Bundesrat veto does not matter. Instead, the institutional measures might capture the effect of government popularity on the government's capacity to influence monetary policy. Overall, however, the results are surprisingly strong--noting that the power of my statistical analysis is eroded by the necessity of having to control for a variety of economic factors and by the lack of publicly available data on voting behavior on the Bundesbank Council and of direct measures of government-central bank conflict.

5 Discussion

Based on the regression analysis, I conclude that the Bundesbank Council is staffed with non-partisan technocrats who are partially insulated from political pressures. This result synthesizes the view that central bank appointees are depoliticized by Bundesbank-internal peer group pressures, on the one hand, with the view that the Bundesbank is subject to external political pressures, on the other. Moreover, the auxiliary hypothesis that the Bundesrat veto protects the Bundesbank's independence, at least to some degree, is the only hypothesis that is consistent with the evidence compiled in both the case study and the regression analysis.

The recent debate on the institutional design of the European Central Bank (ECB) has renewed the scholarly interest in understanding the link between central banking institutions and monetary policy performance. By and large, the design of the ECB mimics that of the Bundesbank. It is empirically motivated by the celebrated monetary policy performance of its German counterpart rather than being shaped by theoretical considerations. The scholarly debate has mostly emphasized the importance of granting formal independence to the ECB to ensure that the Bank follows its mandated price stability goal. My analysis suggests that attention should be paid to the embeddedness of the ECB in the politics and institutions of European federalism that may affect its behavioral independence.

Arguably, the federal systems of Germany and Europe are sufficiently similar so that we can generalize from the German experience to form expectations about the monetary policy

performance of the ECB. The link between federalism and central bank autonomy established in this paper may, however, fail to hold for societies whose politics and institutions differ in significant ways from those of the German polity.

For example, in many developing countries, a considerable proportion of government spending is inflation-financed. Governments that face electoral or party-political pressures to provide public goods, subsidize state enterprises, and redistribute income may prefer a compliant, finance-providing central bank. In such settings, it is plausible that the number of veto players (or the strength of regional states in a federal system) is negatively correlated with central bank independence (Maxfield 1994b). Indeed, it is remarkable that in the highly industrialized world the most independent central banks are found in federal states: Germany, Switzerland, the USA, and Canada; until recently federal states in the developing world have had some of the least independent central banks: Brazil, Argentina, Venezuela, and Mexico. A systematic comparative analysis of the relationship between federalism and central bank autonomy clearly remains an important topic for future research.

In the end, my analysis suggests that legal independence is not a sufficient condition for a stable, low-inflation monetary policy. (Nor, for that matter, are the often-cited "inflationphobia" of the German people, the Bundesbank's uncompromising anti-inflation ethos, or Germany's consensus- and norm-driven political culture.) The checks and balances built into the system of German federalism serve as a (partial) guarantor of the Bundesbank's autonomy. My analysis has implications for developing countries that attempt to address their hyperinflation problems by setting up formally independent central banks. Such institutional solutions are unlikely to meet with success if the underlying politics and institutions that gave rise to hyperinflation in the first place remain unchanged. A formally independent central bank will be able to follow a sound monetary policy only if there exists a coalition of interests politically capable of protecting the integrity of the institution.

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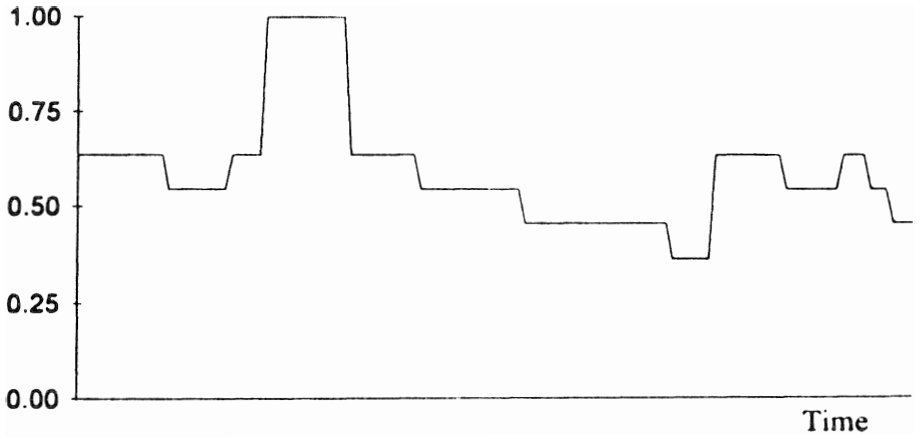
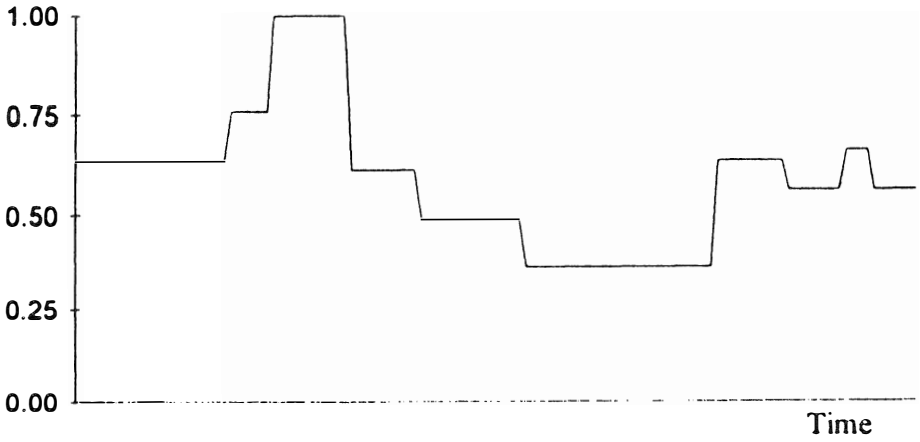
Figure 1

Partisan Support for the Federal Government in the Länder, the Bundesrat, and the Bundesbank Council

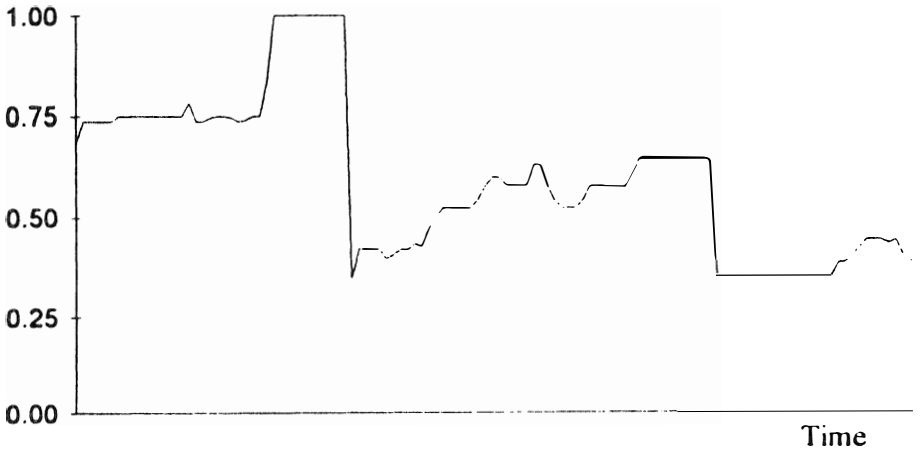
Number of Land Governments Supporting the Federal Government Divided by the Total Number of Land Governments



Number of Members of the Bundesrat Supporting the Federal Government Divided by the Total Number of Members of the Bundesrat



Number of Members of the Bundesbank Council Supporting the Federal Government Divided by the Total Number of Members of the Bundesbank Council



Christian-Liberal Coalition	Grand Coalition	Social-Liberal Coalition	Christian-Liberal Coalition

Figure 2

Electoral Politics Model

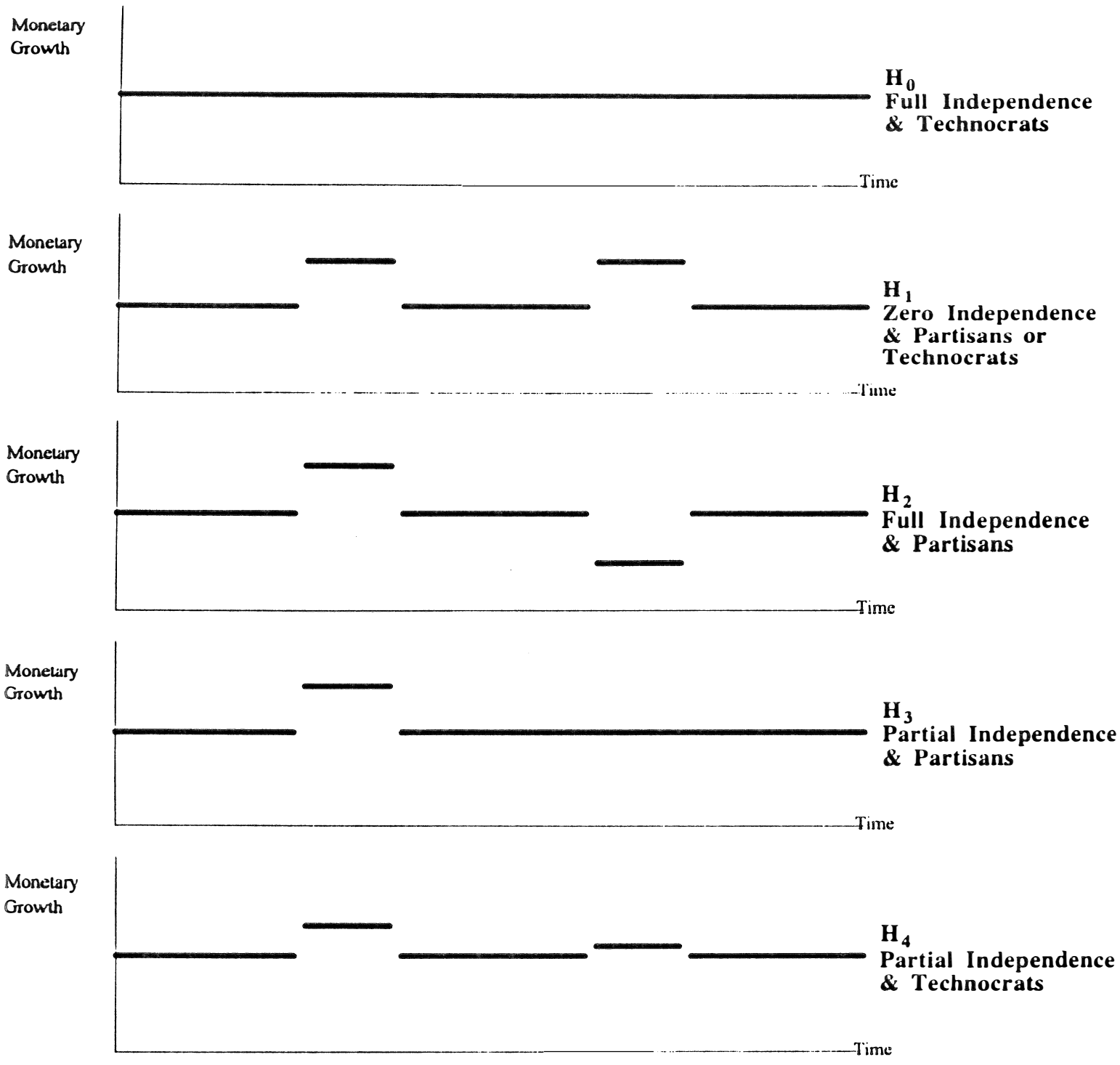
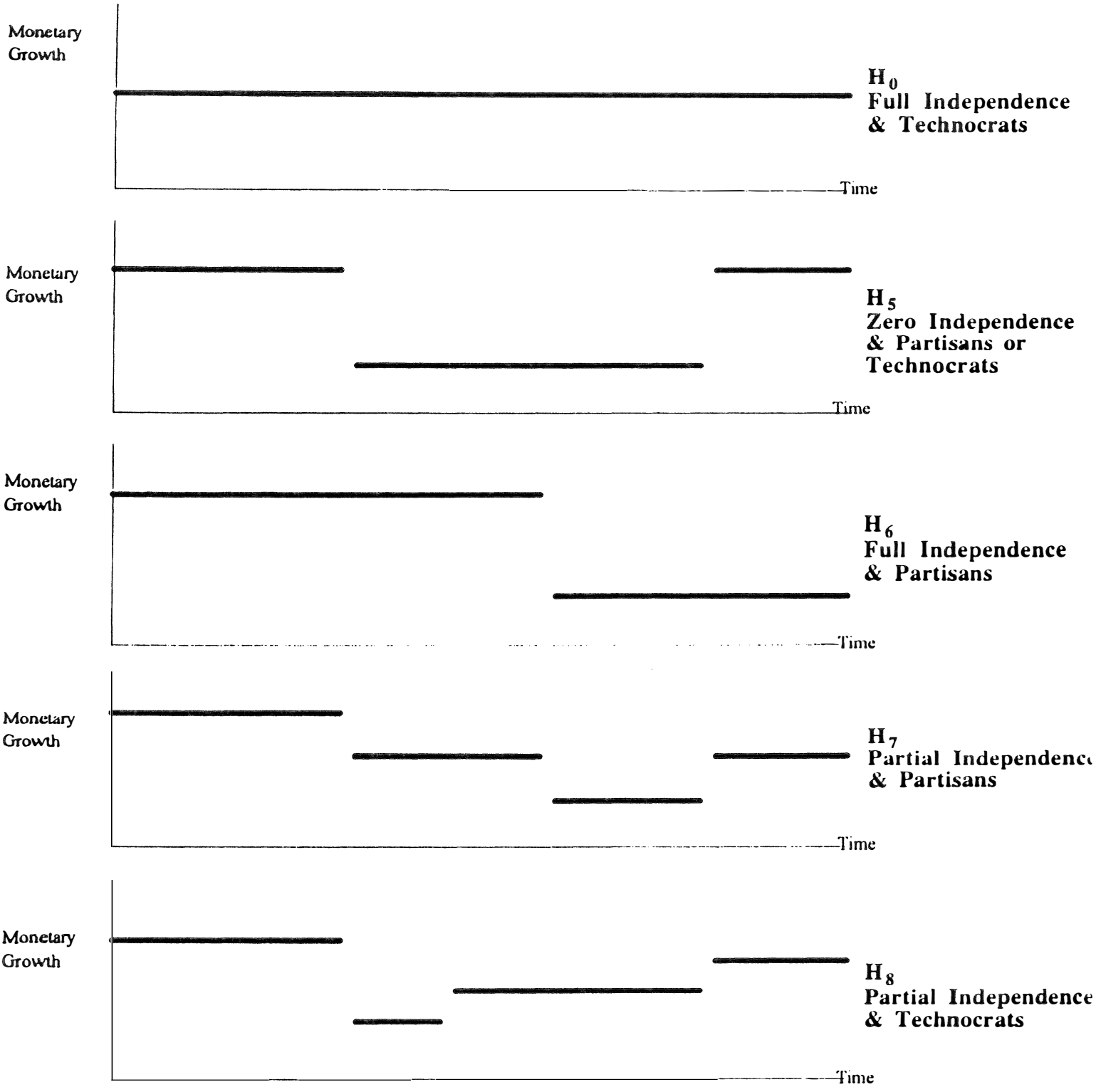


Figure 3

Party Politics Model



Federal Government Controlled by Left-of-Center Party	Federal Government Controlled by Right-of-Center Party	Federal Government Controlled by Left-of-Center Party
Left-of-Center Median Voter on Central Bank Council		Right-of-Center Median Voter on Central Bank Council
Low Degree of Central Bank Independence	High Degree of Central Bank Independence	

Table 1

Monetary Policy Outcomes as a Function of the Degree of Central Bank Independence and of Central Bankers' Types

	PARTISANS	TECHNOCRATS
ZERO INDEPENDENCE	H_1 (Zero Independence & Partisans or Technocrats) • Monetary growth rates are higher prior to federal elections. • Monetary growth rates are lower (higher) if the federal government is controlled by a right-of-center (left-of-center) party.	
PARTIAL INDEPENDENCE	H_3 (Partial Independence & Partisans) • Monetary growth rates are set as a linear combination of the partisan monetary growth rates desired by the federal government and by the median voter on the central bank council, where the relative weight on the monetary growth rate preferred by the federal government decreases with the degree of central bank independence.	H_4 (Partial Independence & Technocrats) • Monetary growth rates are set as a linear combination of the partisan monetary growth rate desired by the federal government and the non-partisan monetary growth rate desired by central bank technocrats, where the relative weight on the monetary growth rate preferred by the federal government decreases with the degree of central bank independence.
FULL INDEPENDENCE	H_2 (Full Independence & Partisans) • Monetary growth rates are higher (lower) prior to federal elections if the federal government is supported (opposed) by a partisan majority on the central bank council. • Monetary growth rates are lower (higher) if the median voter on the central bank council was appointed by a right-of-center (left-of-center) party.	H_0 (Full Independence & Technocrats) Monetary growth rates are free of electoral or party-political effects.

Table 2
Definition of Variables

• Monetary Growth Rate$_t$

percentage growth rate of the seasonally adjusted central bank money stock in period t

• Growth Rate of Gross National Product$_t$

percentage growth rate of the gross national product in period t

• Inflation Rate$_t$

percentage growth rate of the consumer price index in period t

• Rate of Exchange Rate Depreciation$_t$

percentage rate of change of the U.S. Dollar-Deutschmark exchange rate in period t

• Bretton Woods$_t$

dummy variable taking on the value one for periods t=1960/1-1973/1 and the value zero for periods t=1973/2-1989/4

• European Monetary System$_t$

dummy variable taking on the value zero for periods t=1960/1-1979/1 and the value one for periods t=1979/2-1989/4

• Pre-Election Period$_t$

dummy variable taking on the value one if period t is one of four quarters prior to a national election and the value zero otherwise

• Party Control of Federal Government$_t$

party code of the party coalition supporting the federal government in period t; party codes are listed below

• Median Voter on Bundesbank Council$_t$

median party code of the members of the Bundesbank Council in period t, where each member is assigned the party code of the federal or Land government that originally appointed him or her

• Supportive Bundesbank Majority$_t$

dummy variable taking on the value one in period t if $sign\{$Median Voter on Bundesbank Council$_t\}$ = $sign\{$Party Control of Federal Government$_t\}$ and the value minus one otherwise

• Size of Bundesrat Support$_t$

number of Länder for which $sign\{$Party Control of Land Government$_t\}$ = $sign\{$Party Control of Federal Government$_t\}$, where each Land is weighted by the number of its seats in the Bundesrat, except for West Berlin, which is assigned the weight zero; party codes and seat numbers are listed below

• Size of Länder Support$_t$

number of Länder for which $sign\{$Party Control of Land Government$\}$ = $sign\{$Party Control of Federal Government$_t\}$

Table 2 (Continued)
Definition of Variables

• Supportive Bundesrat Majority$_t$

dummy variable taking on the value one if sign{Median Voter on Bundesbank Council$_t$} = *sign*{Party Control of Federal Government$_t$}

• Popularity$_t$

percentage of public opinion poll respondents who express their support for the economic policies of the chancellor in period t

Notes:

LAND	NUMBER OF SEATS IN BUNDESRAT
Baden-Württemberg Bavaria Lower Saxony North Rhine-Westphalia	5
Hesse Rheinland-Palatinate Schleswig-Holstein	4
Berlin* Bremen Hamburg Saarland	3

* Due to the special status of Berlin in the post-war period, the representatives of West Berlin in the Bundesrat had very limited voting rights, and they could only participate in an advisory capacity in matters of central banking. For this reason, the Berlin delegates are assigned weight zero in the calculation of "Size of Bundesrat Support."

PARTY CONTROL OF FEDERAL OR LAND GOVERNMENT	PARTY CODE
CDU/CSU or CDU or CSU	-2
CDU/CSU or CDU or CSU in coalition with FDP or other minor parties	-1
CDU/CSU or CDU or CSU in coalition with SPD and in some cases minor parties	0
SPD in coalition with FDP or other minor parties	1
SPD	2
SPD in coalition with GR or other "alternative" parties	3

where

CDU/CSU = Christian Union Parties
CDU = Christian Democratic Union
CSU = Christian Social Union
FDP = Free Democratic Party
SPD = Social Democratic Party
GR = Green Party

Table 3
Descriptive Statistics of Variables, 1970/1 - 1989/4

VARIABLE	MEAN	MEDIAN	STD.DEV.	MAX.	MIN.
Economic Variables					
Monetary Growth Rate	7.532	7.655	2.435	14	3
Growth Rate of Gross National Product	2.574	2.915	2.273	7	-5
Inflation Rate	3.894	3.790	2.105	7	-.009
Rate of Exchange Rate Depreciation	-2.889	-5.785	12.394	37	-28
Bretton Woods	.442	0	.499	1	0
European Monetary System	.538	1	.502	1	0
Political Variables					
Pre-Election Period	.263	0	.443	1	0
Party Control of Federal Government	.275	1	.968	1	-1
Supportive Bundesbank Majority	-.150	-1	.995	1	-1
Median Voter on Bundesbank Council	.488	1	.837	1	-1
Size of Bundesrat Support	20.538	20	4.455	27	15
Size of Länder Support	5.825	6	.938	7	4
Supportive Bundesrat Majority	.113	0	.318	1	0
Popularity	42.591	42.625	8.545	61	25

Sources: The economic data is contained in OECD, *Main Economic Indicators*, Paris 1992. The popularity data is available from the Institut für Demoskopie Allensbach. All other political variables were constructed by the author based on (i) the dates of federal and Land elections and the party control of federal and Land governments documented in *Zeitschrift für Parlamentsfragen* 3/1990, 470-472; and (ii) the composition of the Bundesbank Council documented by the Bundesbank in its monthly and annual reports.

Table 4

Average Monetary Growth Rates Under Various Political Regimes

REGIMES	AVERAGE MONETARY GROWTH RATE
All Periods	7.816 %
Pre-Election Periods	8.187 %
Periods of Grand Coalition Government	7.783 %
Periods of Christian-Liberal Government	7.563 %
Periods of Social-Liberal Government	8.081 %

Table 5
Testing the Degree of Central Bank Independence and Central Bankers' Types
Dependent Variable: Monetary Growth Rate, 1960/1-1989/4

VARIABLES	HYPOTHESES H_0	H_1	H_2	H_3	H_4
Null Model					
Constant	4.641** (.903)	4.220** (.918)	4.588* (1.751)	4.125** (1.016)	4.356** (.893)
Monetary Growth Rate$_{t-1}$	.721** (.060)	.739** (.060)	.717** (.060)	.730** (.060)	.737** (.059)
Growth Rate of Gross National Product$_{t-1}$	-.122 (.079)	-.136 (.078)	-.124 (.110)	-.123 (.080)	-.129 (.077)
Inflation Rate$_{t-1}$	-.362** (.126)	-.371** (.123)	-.366 (.229)	-.345* (.131)	-.376** (.123)
Rate of Exchange Rate Depreciation$_{t-1}$	3.122 (2.337)	1.593 (2.389)	2.330 (3.028)	1.117 (2.466)	2.250 (2.318)
Bretton Woods	-3.424** (.931)	-2.945** (.980)	-3.431 (2.233)	-2.946** (1.087)	-3.068** (.941)
Bretton Woods*Growth Rate of Gross National Product$_{t-1}$	.220* (.095)	.202* (.093)	.203 (.121)	.184 (.095)	.185 (.093)
Bretton Woods*Inflation Rate$_{t-1}$	.625** (.183)	.592** (.182)	.663* (.272)	.623** (.187)	.607** (.180)
Bretton Woods*Rate of Exchange Rate Depreciation$_{t-1}$	-6.214 (5.232)	-1.338 (5.871)	-7.248 (5.721)	-4.280 (5.578)	-2.433 (5.732)
European Monetary System	-2.063* (.886)	-1.362 (1.023)	-1.770 (1.310)	-1.216 (1.089)	-1.570 (.950)
European Monetary System *Growth Rate of Gross National Product$_{t-1}$	-.095 (.119)	-.095 (.117)	-.120 (.141)	-.129 (.120)	-.093 (.117)
European Monetary System *Inflation Rate$_{t-1}$	.200 (.159)	.047 (.183)	.147 (.246)	.028 (.195)	.099 (.167)
European Monetary System *Rate of Exchange Rate Depreciation$_{t-1}$	-5.086 (2.700)	-1.679 (3.017)	-4.202 (3.327)	-1.793 (3.042)	-2.776 (2.789)
Electoral Politics Model					
Pre-Election Period		.566* (.246)			
Pre-Election Period* Supportive Bundesbank Majority			.294 (.249)		
*w**Pre-Election Period *+(1-w)**Pre-Election Period*Supportive Bundesbank Majority				.641* (.303)	
Pre-Election Period* Size of Bundesrat Support					.022* (.009)
Party Politics Model					
Party Control of Federal Government		.148 (.173)			
Median Voter on Bundesbank Council			.003 (.523)		
*w**Party Control of Federal Government *+(1-w)**Median Voter on Bundesbank Council				.150 (235)	
Party Control of Federal Government*Size of Bundesrat Support					.007 (.007)
Number of Observations	115	115	115	115	115
R^2	.833	.842	.835	.841	.843
Adjusted R^2	.813	.820	.812	.819	.821
Durbin h statistic	-.280	-1.261	-.560	-1.191	-1.387
$F(2,102)$ statistic		2.890	.738	2.659	3.377*

Notes: Standard errors in parentheses; **p=.01; *p=.05; w=proportion of Bundesrat supporting federal government. The F statistic assesses the marginal explanatory contribution of the hypothesis under consideration relative to the null hypothesis.

Table 6

Testing Four Measures of Central Bank Independence
Dependent Variable: Monetary Growth Rate, 1960/1-1989/4

VARIABLES	HYPOTHESES H_4	H_4'	H_4''	H_4'''
Null Model				
Constant	4.356** (.893)	4.332** (.900)	4.652** (.893)	4.273** (.925)
Monetary Growth Rate$_{t-1}$	.737** (.059)	.736** (.059)	.719** (.060)	.733** (.059)
Growth Rate of Gross National Product$_{t-1}$	-.129 (.077)	-.131 (.077)	-.122 (.078)	-.134 (.078)
Inflation Rate$_{t-1}$	-.376** (.123)	-.374** (.123)	-.362** (.123)	-.367** (.124)
Rate of Exchange Rate Depreciation$_{t-1}$	2.250 (2.318)	2.010 (2.337)	3.124 (2.298)	1.558 (2.390)
Bretton Woods	-3.068** (.941)	-3.049** (.954)	-3.383** (.929)	-2.994** (.996)
Bretton Woods*Growth Rate of Gross National Product$_{t-1}$	.185 (.093)	.188* (.093)	.185 (.094)	.198* (.093)
Bretton Woods*Inflation Rate$_{t-1}$	.607** (.180)	.601** (.180)	.619** (.181)	.592** (.183)
Bretton Woods*Rate of Exchange Rate Depreciation$_{t-1}$	-2.433 (5.732)	-2.487 (5.738)	-5.687 (5.737)	-1.991 (5.859)
European Monetary System	-1.570 (.950)	-1.546 (.974)	-2.065* (.872)	-1.401 (1.032)
European Monetary System *Growth Rate of Gross National Product$_{t-1}$	-.093 (.117)	-.097 (.117)	-.095 (.117)	-.116 (.118)
European Monetary System *Inflation Rate$_{t-1}$	.099 (.167)	.094 (.171)	.200 (.157)	.057 (.184)
European Monetary System *Rate of Exchange Rate Depreciation$_{t-1}$	-2.776 (2.789)	-2.470 (2.842)	-5.092 (2.656)	-1.841 (2.991)
Electoral Politics Model				
Pre-Election Period* Size of Bundesrat Support	.022* (.009)			
Pre-Election Period* Size of Länder Support		.083* (.034)		
Pre-Election Period* Supportive Bundesrat Majority			.765* (.348)	
Pre-Election Period* Popularity				.012* (.005)
Party Politics Model				
Party Control of Federal Government*Size of Bundesrat Support	.007 (.007)			
Party Control of Federal Government*Size of Länder Support		.021 (.027)		
Party Control of Federal Government*Supportive Bundesrat Majority			.128 (.209)	
Party Control of Federal Government*Popularity				.002 (.004)
Number of Observations	115	115	115	115
R^2	.843	.843	.842	.842
Adjusted R^2	.821	.821	.819	.820
Durbin *h* statistic	-1.387	-1.387	-1.121	-1.248
$F(2,102)$ statistic	3.377*	3.242*	2.773	2.892

Notes: Standard errors in parentheses; **p=.01; *p=.05. The F statistic assesses the marginal explanatory contribution of the hypothesis under consideration relative to the null hypothesis.